

Docket No.: GR 98 P 3228 P

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JULY 16, 2003UNITED STATES IN THE PATENT AND TRADEMARK OFFICE

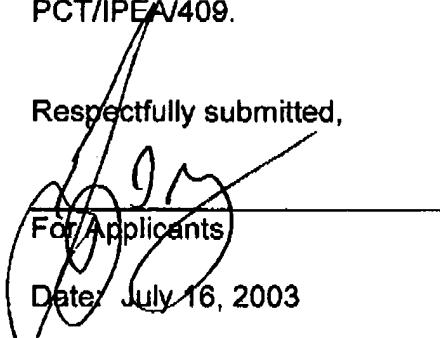
Applicant : Lothar Hofmann et al.
Applic. No. : 09/677,356
Filed : October 2, 2000
Title : Method and Device for the Catalytic Removal of a Pollutant
Contained in an Exhaust Gas of a Combustion System
Examiner : Hien Tran - Art Unit: 1764

LETTER

Hon. Commissioner for Patents,
Alexandria, VA 22313-1450

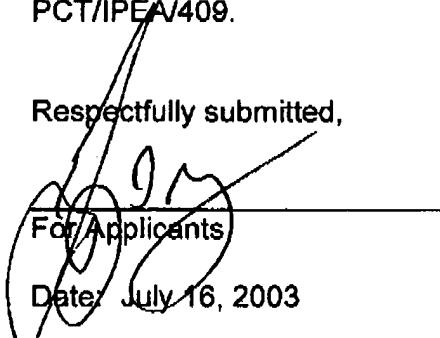
Sir:

Further to a telephone conversation between the Examiner and undersigned counsel earlier this week, enclosed please find a copy of the English-language Form PCT/IPEA/409.


Respectfully submitted,

For Applicants

Date: July 16, 2003


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Translation**PATENT COOPERATION TREATY****PCT****INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference GR 98 P 3228 P	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE99/00746	International filing date (day/month/year) 17 March 1999 (17.03.99)	Priority date (day/month/year) 31 March 1998 (31.03.98)
International Patent Classification (IPC) or national classification and IPC B01D 53/90		
Applicant SIEMENS AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

Date of submission of the demand 25 October 1999 (25.10.99)	Date of completion of this report 14 June 2000 (14.06.2000)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

Form PCT/IPEA/409 (cover sheet) (January 1994)

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PCT/DE99/00746

I Basis of the report

1. This report has been drawn on the basis of (Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.):

 the international application as originally filed. the description, pages 1-12, as originally filed,

pages _____, filed with the demand,

pages _____, filed with the letter of

pages _____, filed with the letter of

 the claims,Nos. 5-8, 9(part), 14(part), as originally filed,

Nos. _____, as amended under Article 19,

Nos. _____, filed with the demand,

Nos. 1-4, 9(part), 10-13, 14(part), filed with the letter of17 April 2000 (17.04.2000)

Nos. _____, filed with the letter of

 the drawings,sheets/fig 1/1, as originally filed,

sheets/fig _____, filed with the demand,

sheets/fig _____, filed with the letter of

sheets/fig _____, filed with the letter of

2. The amendments have resulted in the cancellation of:

 the description, pages _____ the claims, Nos. _____ the drawings, sheets/fig _____

3. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

4. Additional observations, if necessary:

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims		NO

2. Citations and explanations

The following document is referred to:

D1: US-A-5 047 220 (J. POLCER) 10 September 1991
(1999-09-10)

1.

Novelty

D1, which represents the closest prior art, discloses a process for the catalytic removal of a pollutant contained in an exhaust gas, wherein, depending on the concentration of the pollutant, a preset amount of reagent is injected into the exhaust gas and reacted with the pollutant in a catalytic converter (see D1, Summary of Invention, column 1, line 37-column 2, line 19).

As the example given shows (see D1, column 4, lines 25-31), the catalytic converter is designed to ensure complete conversion of pollutant provided that sufficient reagent is added.

In this process reagent is initially injected into the exhaust gas at a sub-stoichiometric concentration to avoid unreacted reagent slip (see D1, column 4, lines 32-37).

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The subject matter of independent process and device Claims 1 and 9 differs from this prior art in that, in order to calculate the amount of reagent to be added, a mean time value is determined for pollutant concentration. The subject matter of both claims is therefore novel (PCT Article 33(2)).

2. **Inventive step**

- 2.1 The problem of avoiding unconverted reagent in the stream of exhaust gas is well known. D1 solves this problem by injecting reagent at a clearly sub-stoichiometric concentration, pollutant concentration being determined on the basis of operationally relevant parameters of the fuel combustion unit (see D1, column 1, line 66-column 2, line 4 and Claim 7 of the present application). Only in a further step is additional reagent carefully metered into the exhaust gas to avoid reagent slip and to remove the maximum amount of pollutants from the exhaust gas. However, the metered addition of reagent is necessary only if very high gas purity requirements are imposed (see D1, column 2, lines 8-13). Clearly and, to a person skilled in the art, obviously, this increased expenditure may be omitted if target exhaust gas purity is achieved after the first step.
- The subject matter of the present application differs from D1 only in that pollutant concentration is measured using a mean, not

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directly: that is, a rapid control system is replaced by a slow one. The type of processing to which measured variables are subjected for the purpose of process control depends on the desired aim. The technique of averaging used in the present application is a known method in control technology: for example, in order to compensate for short-term fluctuations or to reduce the influence of peaks. The provision of a similar control system in the present case is therefore obvious to a person skilled in the art. Consequently, the subject matter of Claims 1 and 9 does not involve an inventive step (PCT Article 33(3)). (See also Box VII in this context.)

- 2.2 The sub-stoichiometric concentration range of reagent required to yield 55-95% conversion (Claims 2, 3 and 10) is disclosed by D1 (see D1, Claim 10). Consequently, the subject matter of these claims does not involve an inventive step (PCT Article 33(3)).
- 2.3 The use of ammonia or ammonia-releasing substances in combination with a DeNO_x catalytic converter (Claim 8) is likewise disclosed by D1 (see D1, column 2, lines 39-58). Consequently, Claim 8 likewise fails to involve an inventive step (PCT Article 33(3)).
- 2.4 The structural features or procedures defined in the remaining dependent claims address

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problems that are dealt with by a person skilled in the art in his routine professional activities without inventive input.

3. Industrial applicability

Industrial applicability is obvious.

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VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

Although the definition of the claims is clear, the description raises a number of questions. The expression "mean", for example, may denote an arithmetical or a geometrical mean. Moreover, the number of measurements to be averaged or the interval between measurements are not adequately explained.

Page 12, last paragraph, indicates that even a single measured variable may be understood as a mean. No further details with respect to the frequency with which this variable is measured are given. Consequently, the entire definition of Claim 1 must be placed in question. "Single" values are also used in D1 to determine the starting concentration of pollutants in the exhaust gas.

Sensors to measure gas flow are, as a rule, relatively insensitive. With respect to the above-indicated passage, therefore, it should be queried whether any of the values determined by these instruments fall within the definition of "mean" as understood in the present application